



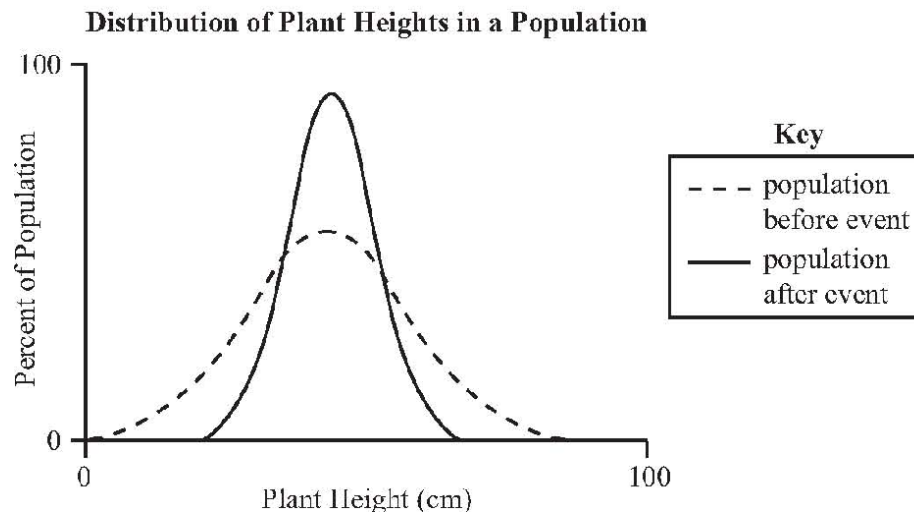
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### ISAT Sample Questions: Grade 10 Science

1. Use the graph below to answer the question.



The distribution of plant heights in a plant population before and after an event are shown in the graph. Which explanation is **best** supported by the data?

- A. The tallest plants survived the event since their height was an advantage.
- B. The tallest plants survived the event since they had more nutrients stored in their cells.
- C. The plants of average height survived the event because the event selected against the shortest and tallest plants.
- D. The plants of average height survived the event because they were not part of the population before the event.

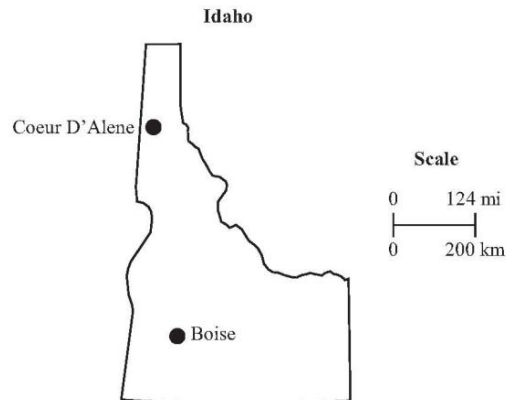


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2. Use the map below to answer the question.



The driving distance from Coeur D'Alene to Boise is about 410 miles. Which value **most** closely represents the distance between these two cities in metric units?

- A. 254 meters
  - B. 254 kilometers
  - C. 660 meters
  - D. 660 kilometers
3. Which question about an energy resource can **best** be tested using a scientific investigation?
- A. Is using wind power dangerous?
  - B. Is hydroelectric power better than wind power?
  - C. Do wind turbines ruin the beauty of the landscape?
  - D. What minimal wind speed will generate electricity?

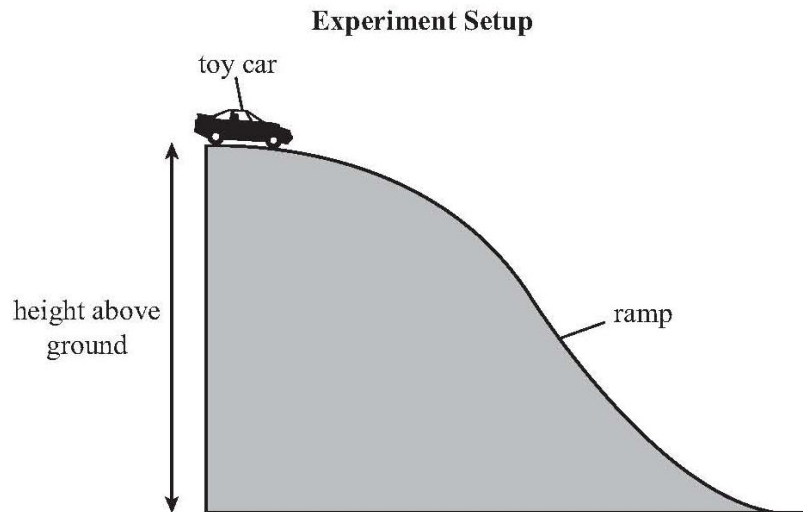


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4. Use the setup below to answer the question.



An experiment was designed to determine which shape of toy car had the greatest acceleration down a ramp. Which set of materials would be **best** for this experiment?

- A. one five-meter ramp, one toy car, one clock
  - B. one five-meter ramp, several types of toy cars, a stopwatch
  - C. one meter stick, one five-meter ramp, two types of toy cars, a stopwatch, a clock
  - D. one meter stick, one five-meter ramp, one seven-meter ramp, one ten-meter ramp, one toy car
5. Students in a science class want to design an investigation to determine if fertilizer added to soil affects the average height of a plant over time. Which items would the students need to complete this investigation?
- A. a ruler, a calculator, a plant, and soil samples with different amounts of fertilizer
  - B. a microscope, a beaker, a plant, and soil samples with the same amount of fertilizer
  - C. a computer, a stopwatch, a plant, and soil samples with different amounts of fertilizer
  - D. a tape measure, graph paper, a plant, and soil samples with the same amount of fertilizer

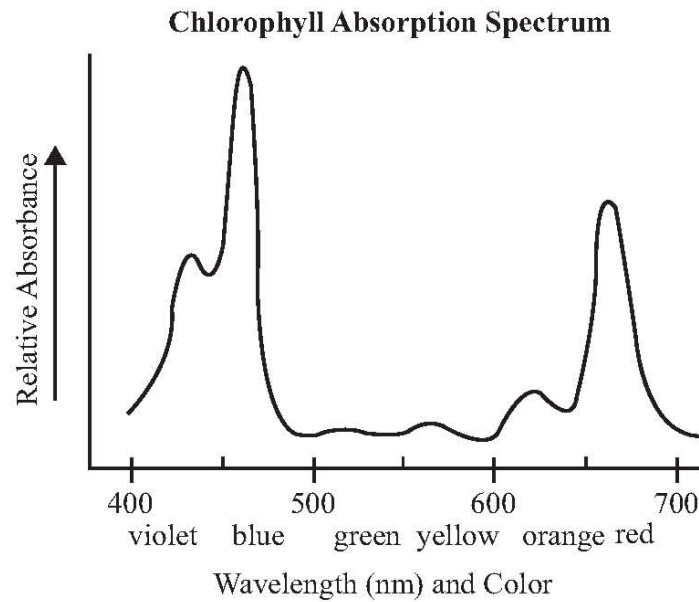


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6. Use the graph below to answer the question.



Which statement is **best** supported by this graph?

- A. Chlorophyll absorbs mostly blue and red light.
- B. Red light has a shorter wavelength than blue light.
- C. Chlorophyll reflects blue and red light and absorbs green light.
- D. Green light is reflected because it has the shortest wavelength.

7. Which equation **best** represents the process of nuclear fission?

- A.  $P \longrightarrow Q + R + \text{Energy}$
- B.  $P + \text{Energy} \longrightarrow Q + R$
- C.  $P + Q + \text{Energy} \longrightarrow R$
- D.  $P + Q \longrightarrow R + \text{Energy}$



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8. Use the data table below to answer the question.

**Characters of Four Atoms**

Atom	Electrons	Protons	Neutrons
P	11	12	11
Q	11	11	10
R	10	11	11
S	12	12	11

An atom of a certain element contains 11 electrons, 11 protons, and 11 neutrons. Which atom in the data table is an isotope of this element?

- A. Atom P
- B. Atom Q
- C. Atom R
- D. Atom S

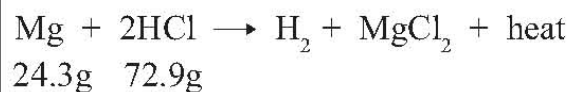


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9. Use the reaction and chart below to answer the question.



### Students' Descriptions of a Reaction

Student	Mass of Reactants (g)	Mass of Products (g)	Note
1	97.2	97.2	The reaction absorbs heat.
2	97.2	60.8	The reaction releases heat.
3	97.2	60.8	The reaction absorbs heat.
4	97.2	97.2	The reaction releases heat.

Students were given an equation showing the reaction between magnesium and hydrogen chloride. Then the students watched as magnesium and hydrogen chloride reacted, producing heat as one of the products. Which student **best** described this reaction?

- A. Student 1
- B. Student 2
- C. Student 3
- D. Student 4



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10. Phytoplankton are producers that can live in pond ecosystems. The number of phytoplankton in a pond can be regulated by water temperature, amount of sunlight, water depth, and nutrient load of surface water. Carbon dioxide production in pond water is being studied by researchers because carbon dioxide and water combine to form weakly acidic carbonic acid. What will **most likely** be the effect of an increase in sunlight on pond water acidity?
- A. Photosynthesis will decrease, which will result in an increased amount of carbon dioxide in the pond and a decrease in pond acidity.
  - B. Photosynthesis will decrease, which will result in a release of carbon dioxide by the phytoplankton and an increase in pond acidity.
  - C. Photosynthesis will increase, which will cause the phytoplankton to absorb more carbon dioxide, resulting in a decrease in pond acidity.
  - D. Photosynthesis will increase, which will cause the phytoplankton to absorb more carbon dioxide, resulting in an increase in pond acidity.

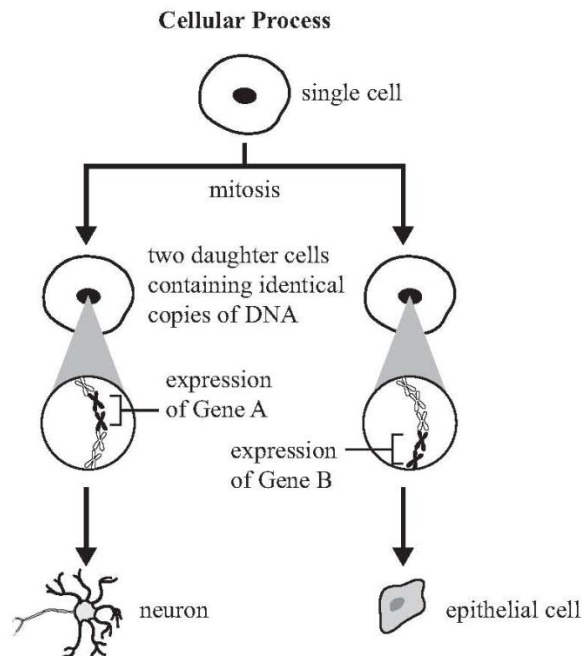


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11. Use the diagram below to answer the question.



Which cellular process is shown in the diagram?

- A. a genetic mutation resulting in two different types of cells
  - B. a double-stranded DNA molecule forming a single-stranded DNA molecule
  - C. a single cell differentiating to produce two kinds of cells in the human body
  - D. a cell splitting into two daughter cells and then splitting into two different cells
12. Which statement **best** explains why stellar matter began to spin during the formation of the solar system?
- A. As gas and dust contracted, the momentum of those particles caused rotation.
  - B. As energy waves were produced, they formed outer circular boundaries for the rotation of stellar material.
  - C. As cosmic materials were released from a central point, solar winds pushed them into a rotational environment.
  - D. As the gravity within the system increased, friction between space and solar particles forced the particles into a rotational movement.



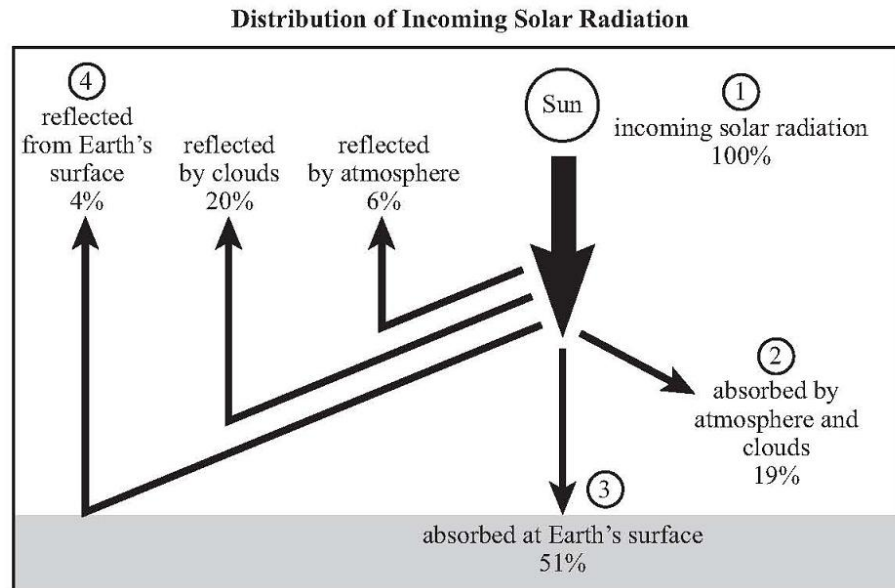


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13. Use the diagram below to answer the question.



The diagram shows the distribution of incoming solar radiation to the atmosphere of Earth. Which statement **best** explains how the values at the specific positions would likely change if a large volcanic eruption filled the atmosphere with volcanic ash?

- A. The percentage at position 1 would increase.
- B. The percentage at position 2 would decrease.
- C. The percentage at position 3 would decrease.
- D. The percentage at position 4 would increase.

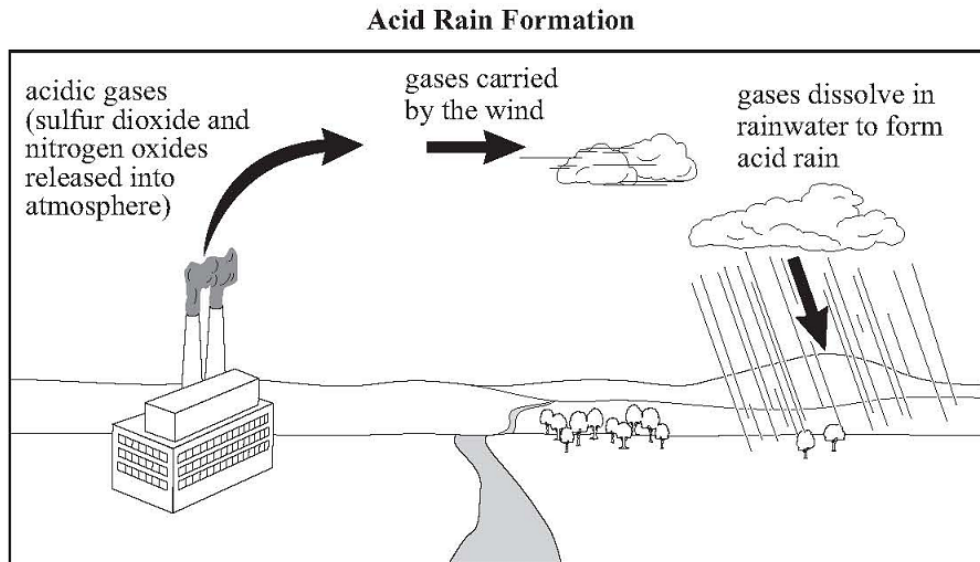


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14. Use the diagram below to answer the question.



The burning of coal by some factories can result in increased sulfur dioxide and nitrogen oxides in the air. These gases are then converted to sulfuric acid and nitric acid, which return to Earth as acid rain. Which statement **best** describes how acid rain can affect the natural environment?

- A. Plant roots are strengthened by absorbing acid rain.
- B. Animal fur is bleached white by exposure to acid rain.
- C. Water systems have decreased pH levels due to acid rain.
- D. Soil becomes more enriched with nutrients as a result of acid rain.



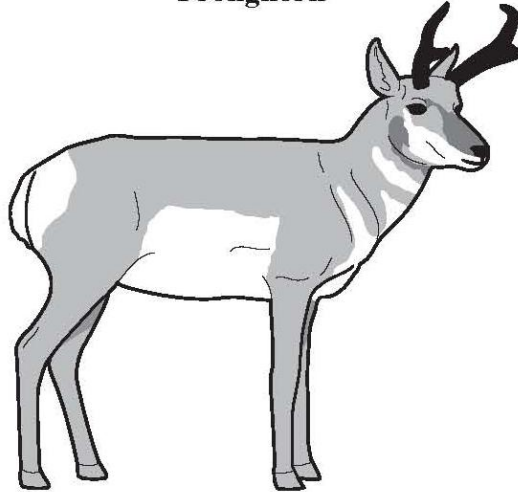
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15. Use the drawing below to answer the question.

Pronghorn



A pronghorn is a hoofed mammal that can live in the grasslands and foothills of Idaho. Which statement explains how technology could **best** be used to advance scientific knowledge about the pronghorn?

- A. Computer-drawing programs could be used to re-create images of pronghorns.
- B. Stopwatches could be used to time the length of the day in a pronghorn habitats.
- C. Cellular telephones could be used to verbally communicate pronghorn sightings.
- D. Satellite-tracking collars could be used to collect data on pronghorn migration patterns.



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### ISAT Sample Questions: Grade 10 Science

Question #	Correct Answer	Standard/Goal/Objective
1	C	1.2.1
2	D	1.3.3
3	D	1.6.1
4	B	1.6.2
5	A	1.6.3
6	A	1.8.1
7	A	2.4.2
8	B	2.4.3
9	D	2.5.1
10	C	3.2.3
11	C	3.3.4
12	A	4.1.1
13	C	4.2.1
14	C	5.1.1
15	D	5.2.2